

Route Description

MR. FISH: Thank you very much, Colonel.

I have spent the last approximately 30 years of my life beating around the desert in Mexico and the Southwest promoting and organizing off-road events, of which I would assume most of you know the most famous one, the Tecate SCORE Baja 1000, which this is our 30th anniversary, and I would like to take a moment and thank Dr. Tether for bringing me out of the desert and hopefully trying to clean up my act and help design the route for this Challenge, which is a challenge on my part, it really is.

Last night, we had a little mixer and a lot of you were there. The questions that were asked of me were wanting to know the actual course. Well, obviously, I can't do that. You will get that information two hours before your departure on the day of the event.

But I would like to clarify a couple of things. We have been talking about 300 miles. It is approximately 300 miles, but there are going to be two stages that will not actually be event miles, and that is the ribbon cutting at Anaheim, as Dr. Tether mentioned earlier, and that is on a Thursday, and then the vehicles or systems, or whatever we

1 are really calling these entries, will be transported to the
2 California Speedway, and at that point, on Friday, there
3 will be a technical inspection and also a small course that
4 will make sure that these units comply with all the rules
5 and regulations, and can do the things that you said in your
6 papers that you will be able to do.

7 Then, from there, will be transported or you will
8 transport your system to an area in the Barstow area, and
9 again I am trying to be as vague as I can here, but we would
10 like you to know what part of the country you should start
11 thinking about ending up on Friday evening for the start of
12 the event on Saturday morning.

13 So, again, it is more like approximately 250 miles
14 of actual off-road, trail, dry lake bed terrain type, and
15 some pavement, actual competition driving, so some of you
16 that are concerned about the time constraint, it is not 300
17 miles, it is going to be somewhere, let's say, between 225
18 and 250 miles.

19 I have had the opportunity over the last few
20 months to go look at some very, very challenging terrain in
21 California and Nevada. We have not decided on a course yet.
22 We have a lot of things that we have to go through with the

1 different governmental agencies to make sure that we can
2 conduct this event in a safe and prudent manner.

3 Next slide, please.

4 I just want to go over some slides here and show
5 you some of the types of terrain that we are going to
6 include in the Challenge. As you can see, this is a paved
7 street. It is actually a street in a community. It is
8 actually a community that we will, in one of the three
9 proposed routes, that we will go through, so your system
10 will have to be able to negotiate that type of terrain,
11 namely, pavement with a curb on the side, traffic lights --
12 which we will be closing down obviously any oncoming traffic
13 or traffic lights, or things of that nature.

14 Next slide, please.

15 Here is an overpass and obviously, again, please
16 excuse me for some of my ignorance, because what Dr. Scott
17 Fish was talking about, believe me, is way over my head.
18 You know, I am really an off-road goofball, that's what I
19 am, you know, and we don't have these types of systems that
20 we can train, we have to use our own brains. But I must
21 mention at this time I think some of our competitors might
22 be autonomous that compete in my event, so I don't know, but

1 you will obviously have to negotiate this and make sure you
2 do not fall over the sides of this overpass and land on a
3 freeway of some sort, so we basically said there is
4 somewhere between 1 and 10 percent on terrain like this
5 overpass.

6 Then, we have what we call unsurfaced -- next
7 slide, please -- unsurfaced roads, which this is where you
8 will be able to make up the speed that is necessary to
9 finish the Challenge. Here is the opportunity to let the
10 system go full out.

11 The question I think that I have, and we have been
12 talking about with the DARPA people, is the manned vehicle
13 that will be your safety vehicle. I think you should pay a
14 lot of attention to who will be driving that vehicle and the
15 setup on that.

16 You will have to go by the SCORE rules and
17 regulations which you will be getting on the web site, on
18 the DARPA web site, which explains the technical aspect of
19 what that safety vehicle must have, because that individual
20 is going to be a very talented individual to stay up with
21 your system.

22 So, as you can see, you will be able to make up

1 some time on surfaces like this. We do have somewhere
2 between 40 and 60 percent that will be similar to this, but
3 there will be narrow, wider, some washboard, some berms, and
4 some moguls, which we refer to in off-road, and then also on
5 surface, which will be -- next slide -- which will be
6 narrow, very hilly, switchback-type terrain, which as you
7 can see if you go over to the side, you will be down in a
8 gully and even if you had that vehicle that throws its arms
9 out and turns it over, I think it would be very difficult to
10 get out of that situation, so you do not want to be down in
11 that gully.

12 Next slide.

13 We have some areas in one of the proposed routes
14 that will be actually paralleling some railroad tracks,
15 which kind of make it very interesting, and naturally, with
16 my luck, there will be a railroad coming the opposite way as
17 your unit is going next to it, so you are going to have to
18 really have your sensors working at that time.

19 Next slide.

20 Twenty to 30 percent of the proposed route will be
21 on terrain similar to this, what we are calling hard pack.
22 Again, it will be fast terrain, but as you can see, if you

1 can see the tire marks on there, that's a gully, and your
2 system is going to have to be able to read obviously the
3 difference between a washout or a shadow from some of the
4 bushes.

5 You can see that the individual that was driving
6 this one kind of did a little fishtail there, and I assume
7 that you are going to have a lot of that during your time
8 period.

9 Next slide.

10 Some very interesting terrain. We have a
11 challenge to include in that 20 to 30 percent some very
12 silty, talcum powder type terrain that will be, you know, as
13 you are traversing it, you will have the silt coming up over
14 your sensors or what have you, however you are going to
15 operate your system. But it also has some pretty good deep
16 holes in it and some moguls that, you know, really make it
17 interesting.

18 Next slide.

19 And we will go over some ridge tops. Again, it is
20 kind of hard to see the actual grade here, but this is a
21 pretty good size grade there, and you have to be able to
22 negotiate that left-hand turn and to make sure that it does

1 stay left, that all of a sudden it's not a switchback coming
2 the other way and you are caught in mid-air with no way to
3 turn that vehicle, so this is going to be a real challenge,
4 I think.

5 As you can see, it's a typical desert type terrain
6 on either side of you. There will be areas that by way of
7 GPS and other I guess route definitions will allow you to
8 make a decision whether you want to stay on that particular
9 trail or, let's say, go to the left or right. There will be
10 areas throughout the course that will have that opportunity.

11 Next slide, please.

12 Then, as part of this about 20 to 30 percent we
13 also have very, very rocky, volcanic type rocks that are
14 over the course, and again, the site looks like it is very
15 easy. I have had, as I said, the pleasure, opportunity, or
16 misfortune to be able to drive over three proposed courses,
17 and this is a real tire-eater, I will tell you. Those are
18 very sharp rocks, and it's very challenging.

19 Next slide.

20 Then, we have some, about 5 to 20 percent, which
21 we are going to call like an open area that has some ruts
22 and small bushes, and different types of vegetation, and

1 contrary to what you saw in that robotic vehicle, you know,
2 just knocking down trees and things of that nature, that is
3 not what our intent is. We are going to conform with all of
4 the environmental requirements, which are quite stringent,
5 both in California and Nevada.

6 We are not running amuck out in the desert. We
7 are there to accomplish something that hopefully will
8 benefit our country, and we are going to be doing it in a
9 very safe and prudent manner.

10 Next slide.

11 Here is a great fun part of the Challenge on some
12 dry lake beds, which will makeup the rest of that 5 to 20
13 percent. This is absolutely, it looks like Bonneville salt
14 flats for those of you that have ever witnessed any speed
15 trials, it is flat out, as fast as you can go.

16 There is, depending again on what Mother Nature
17 does, I was out on basically the same type of terrain last
18 Wednesday, and the vehicle I was in, which was a stock F150
19 Ford, I was able to go about 90, 95 miles an hour on that.
20 But then again, it rained about two days before, and there
21 were a couple of little gotchas right in the middle of that
22 and you had to be prepared to make sure that you didn't tip

1 over on that.

2 But this is going to be exciting terrain and in
3 all of the courses, we have some of this.

4 Next slide.

5 Water crossings, which we are going to have no
6 matter what course we use, are very exciting, and I think
7 they are going to definitely be a challenge.

8 This particular shot was done about three weeks
9 ago, prior to the rains, and I went back on Wednesday, as I
10 said, in an area similar to this, and if we had a vehicle,
11 taken a picture of my vehicle, the water was basically up
12 over the -- I believe that's a -- I don't know what that is
13 -- but anyway, in the Ford it was up over the grille and it
14 was quite interesting.

15 But anyway, you are going to have exactly this
16 type of terrain, and again I am having a hard time
17 understanding how a sensor or a computer, or whatever it is,
18 is going to be able to start at that side and figure out
19 that, yes, there are tracks on that side and I can make it,
20 or do I go around it, or do I turn around and go home. I am
21 not sure, but anyway.

22 Next slide.

1 Again, a typical water type crossing that you will
2 encounter. This one here is a little more fun because it
3 has a ridge on it, and again, coming through that, you are
4 going to have to have a little speed and then what do you do
5 when you get to the other side.

6 Next slide.

7 We have -- and as you can see, we blocked these
8 out, so you wouldn't know where this is obviously, because I
9 am sure if you are like off-road enthusiasts, by the time
10 this is over, you would already be out figuring out exactly
11 where that underpass is, and you would be pre-running right
12 now, which we obviously are not going to allow.

13 But this creates a very interesting challenge
14 because obviously, there is a height and a width situation
15 here. I think in our rules, it's a maximum of 10 feet wide
16 and 9 feet high, and you can see why, because it would be
17 rather embarrassing for everyone if you got to this point,
18 and, you know, you would turn into a sardine can.

19 And what is on the other side of this, I think is
20 kind of interesting, because they didn't show it, but this
21 particular route, I mean that is as fantastic as I can
22 imagine and what I like to see in off-road racing, and that

1 is a challenge. There are some silt beds on the other side
2 of this with moguls, and if you are familiar with skiing,
3 you know that is what I am referring to, these moguls, but
4 these are moguls, not for skis. I mean this is horrendous.

5 This is going to be a great photo opportunity or Kodak
6 moment right there.

7 Next slide.

8 Again, you know, my background is, although I
9 think besides Dr. Tether, I wore a suit because, you know,
10 these Washington guys, normally, I am in shorts or levis or
11 whatever, and again, Dr. Tether was able to hose me off and
12 get me cleaned up for this meeting.

13 But they said, well, you know, we are going to
14 make obstacles. Well, I think after the second or third
15 time that some of these people from Washington were out on
16 the course with me, they realized that Mother Nature has
17 already made the obstacles, and between now and March of
18 next year, those obstacles will change even from what we
19 design, so I don't think it's necessary for us to do
20 anything more than what we have, and this being an obstacle
21 that is obviously a very, very narrow pass here, very high
22 climbing up to this, and going down is an E-ride as far as I

1 am concerned when I was driving, so you will enjoy this part
2 of it.

3 As a result of last night, I am sure or I am
4 hoping that you will have a lot of questions for me, but
5 unfortunately, I think I am going to have to just reiterate
6 on what I said this afternoon here, or this morning, excuse
7 me.

8 I can't tell you where the course is obviously, so
9 what I can tell you is that, first of all, you have to build
10 an incredible system to complete the course. This is a
11 challenge.

12 My job is -- and I shouldn't say that because no
13 one at DARPA, I am not at DARPA -- but I do have a job, but
14 I think it's a job that a lot of people have envied because
15 I get to play in the desert all the time, every day, seven
16 days a week, where most people dream about that during the
17 week and do it on the weekend, so I would like to consider I
18 really don't have a job, so maybe I am part of you guys.

19 But you have given me a job in making this a
20 challenge from the standpoint that hopefully, we will have a
21 finisher, but as Dr. Tether said, this is a challenge, and
22 we are, the people sitting in this room I think have an

1 opportunity to be a part of something that has never been
2 done, and what a rare opportunity I think that is to be a
3 part of that.

4 I mean we will look back, if we come back here
5 maybe 25 years from now, or 50 years, or 10 years, the
6 vehicles that you see in this excellent museum might be the
7 vehicles that started this DARPA Challenge, and these will
8 be common vehicles that we will see, and I think that is the
9 goal that DARPA is trying to do.

10 I personally, and the off-road community which
11 SCORE represents, I think are very delighted to have the
12 opportunity to participate in it. So, again, I look forward
13 to answering any questions you have, but, please understand
14 that I have been sworn, signed off, all the things that are
15 necessary, that I cannot tell you a lot more except maybe to
16 describe the terrain and what I would suggest as a vehicle
17 that will be your safety vehicle.

18 Again, thank you very much. I look forward to
19 seeing you throughout the year.

20 [Applause.]

21 COL NEGRON: Okay. We have reached our mandatory
22 break period. We are going to take 30 minutes. This is a

1 great opportunity for you guys to mingle, talk to our staff,
2 so please take a break. Remember the restroom is on the
3 first and third floor. Thank you very much.